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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 04/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/682,007

Applicant(s)

DICKSON, LEROY DAVID

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on February 19, 2002, which has been entered as paper number 3.
- By this amendment, the applicant has canceled claims 1-8 and has newly added claims 9-16.
- Claims 9-16 remain pending in this application.
- The rejections to claims 1-8 under 35 USC 112, first and second paragraphs, set forth in the previous Office Action are withdrawn in response to applicant's amendment.

Response to Amendment

1. The amendment filed on February 19, 2002 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the expressions for C_R and C_S recited in the newly added claim 9 are not supported and disclosed by the specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
3. Claims 9-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in

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the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejection based on the newly added matters are set forth in the paragraph above.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 9-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

The parameters “β”, “s” and “p” recited in claim 9 are indefinite which make the scopes of the claims unclear. These parameters must be identified in order to give logical meanings to the claims.

Claim 1 as stands now are confusing since it is not clear what are the limitations being claimed and are sought for patent here.

Regarding claim 12, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

The phrase “the worst case” recited in claims 15 and 16 is indefinite since it is not clear what is considered here to be the “worst” case.

Claims 10-16 inherit the rejection from their based claims. Clarifications are required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Jannson et al (PN. 5,026,131) in view of the patent issued to Kato et al (PN. 5,726,782).

Jannson et al teaches a *holographic grating* that is comprised of *Bragg volume grating* with a plurality of *Bragg planes* periodically arranged within a *recording medium* serves as the *volume phase medium*, (please see Figures 10a to 10k and columns 8-10). The plurality of Bragg planes is formed by periodically modulating the refractive index of the medium. Jannson et al teaches that the volume holographic grating has the advantage of having *low sensitivity to polarization* such that the TE and TM polarization components (or known in the art as P and S polarization components) of incident light to the grating have the *same diffraction efficiency*, (please see column 11, lines 34-44). The Bragg volume grating is known in the art as a phase grating since the plurality of Bragg planes modulates the phase of the incident light beam. Although this reference does not disclose explicitly about the expressions recited in the claims however since the expressions are the standard grating equations and since the grating has same diffraction efficiency for both the S and P polarization components, it is implicitly true that the equations are satisfied by the disclosure of Jannson et al.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the volume holographic grating has a rigid support and transparent cover means. However it is quite well known in the art to place the recording medium of the holographic grating on top a transparent substrate and to place a cover plate on top the recording medium for protecting it from the environment, as demonstrated by the teachings of Kato et al. Kato et al teaches a hologram element that is comprised of a *photosensitive layer* (1a) serves as the *recording medium* that is placed on a *transparent base plate* (2) serves as *the rigid support means*. Kato et al teaches that a *cover plate* (4) serves as the *transparent cover means* is then placed on top of the photosensitive layer for protecting the layer, (please see Figure 1 and column 5). Kato et al also teaches that a transparent sealing layer (7b) including

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adhesive is provided between the cover plate and the base plate to provide a sealant and protectant for the photosensitive recording layer, (please see column 5, lines 55-60). Kato et al further teaches that an anti-reflective film (5) is provided at the exterior surface of the base plate, (please see Figure 10), for reducing unwanted reflection at the interface of the air and the base plate. The reflection occurs at the interface of the air and optical medium (such as glass base plate) is known in the art as Fresnel reflection losses, (please see Jannson et al column 1 lines 60-65). It would then have been obvious to one skilled in the art to apply the teachings of Kato et al to modify the volume holographic gating of Jannson et al accordingly for the benefit to protect the grating medium and to reduce the unwanted noises from the environment to enter the volume holographic grating. Although these references do not teach explicitly to also have the exterior surface of the cover plate coated with an anti-reflective film however such modification would have been obvious to one skilled in the art for the benefit of reducing unwanted reflected light at the interface of the cover plate with the air.

With regard to claims 13-16, Kato et al teaches an arrangement having a reflecting film placed at exterior surface of a convex lens, serving as the cover plate, (26 of Figure 5, or 538 of Figure 15), such that the light passes through the hologram grating is reflected back into the holographic grating. It would then have been obvious to one skilled in the art to apply the teachings of Kato et al to modify the volume holographic grating of Jannson et al accordingly for the benefit of providing different geometric arrangement for the holographic grating for different applications.

With regard to the minimization of the maximum difference between the diffraction efficiency of the S- and P- polarization light components, Jannson et al teaches that the volume holographic grating has same diffraction efficiency for S- and P- polarization light which minimizes the difference to zero.

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Response to Arguments

8. Applicant's arguments filed on February 19, 2002 have been fully considered but they are not persuasive. The newly added claims have been fully considered and are rejected for the reasons stated above.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.



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